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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,523	01/03/2006	Shinji Hirai	052668	5341
38834 7590 01/22/2010 WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP 1250 CONNECTICUT AVENUE, NW SUITE 700 WASHINGTON, DC 20036				
EXAMINER				
BALL, JOHN C				
ART UNIT		PAPER NUMBER		
1795				
NOTIFICATION DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentmail@whda.com

# Office Action Summary

**Application No.**

10/540,523

**Applicant(s)**

HIRAI ET AL.

**Examiner**

J. CHRISTOPHER BALL

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI/200)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date: \_\_\_\_\_

## DETAILED ACTION

### *Summary*

1. This Office Action is based on the Amendment filed with the Office on September 29, 2009, regarding the HIRAI et al. application.
2. Claims 1-7 are currently pending and have been fully considered.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
  1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 1, 2, 4, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over KISHI et al. (US 5,824,561) in view of CHIU et al. (US 5,987,890).

Regarding claim 1, KISHI discloses a cooling device comprising:

a first electrode (156-a, Figure 15; Col. 27, lines 4-10);

a second electrode (156-b, Figure 15; Col. 27, lines 4-10);

a thermoelectric conversion material disposed between the first and second electrode (153 and 154, Figure 15; Col. 26, line 65 - Col. 27, line 4); and

an electric conductor directly connecting the first and second electrode making the first and second electrodes electrically short-circuited (Col. 27, lines 10-17).

KISHI additionally teaches the device cooling an aluminum radiating plate adhered to the heat generating side (Col. 12, lines 45-56).

KISHI does not explicitly teach the first electrode in contact with an electronic component to be cooled.

However, CHIU discloses a means of electronic component cooling, wherein is taught that the cooling device is in contact with the electronic component to be cooled (Col. 4, lines 4-11).

At the time of the present invention, it would have been obvious to one of ordinary skill in the art to modify the device as taught by KISHI by bringing it into contact with the electronic component to be cooled, as taught by CHIU, because it is a way to dissipate localized heating in electronic systems (CHIU, Col. 1, lines 42-44).

Regarding claims 2 and 7, KISHI teaches the thermoelectric conversion material is a combination of p-type and n-type materials arranged alternately in series (153 and 154, Figure 15; Col. 26, line 65 - Col. 27, line 4).

Regarding claim 4, the limitation that the claimed cooling device is used in a cooling system is a claim of intended use and therefore not given the same patentable weight as the structural elements of a claimed device. At the time of the present invention, it would have been obvious to one of ordinary skill in the art, given the cooling ability of the device disclosed by KISHI (Col. 12, lines 45-56), to utilize the cooling device of KISHI as part of a cooling system as taught by CHIU because it is a way to dissipate localized heating in electronic systems (CHIU, Col. 1, lines 42-44).

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over KISHI et al. (US 5,824,561) in view of CHIU et al. (US 5,987,890) as applied to claims 1, 2, 4, and 7, above, and in further view of MURAMATSU et al. (US 6,326,610 B1).

KISHI as modified by CHIU teaches the limitations of claim 1, as outlined above.

KISHI does not explicitly teach two or more cooling devices stacked.

However, MURAMATSU discloses Peltier devices for cooling, wherein is taught stacking two cooling devices (Col. 5, lines 19-21).

At the time of the present invention, it would have been obvious to one of ordinary skill in the art to stack the device as taught by KISHI, as modified by CHIU, in the manner as taught by MURAMATSU because it increases the cooling ability of the overall system.

7. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over KISHI et al. (US 5,824,561) in view of CHIU et al. (US 5,987,890) as applied to claims 1, 2, 4, and 7, above, and in further view of BENSON et al. (US 4,650,919).

Regarding claims 5 and 6, KISHI as modified by CHIU teaches the limitations of claim 1 and 2, as outline above. KISHI teaches the thermoelectric conversion material is a combination of p-type and n-type materials arranged alternately in series (153 and 154, Figure 15; Col. 26, line 65 - Col. 27, line 4).

KISHI does not teach that the thermoelectric conversion material is a p-type material only or that the thermoelectric conversion material is an n-type material only.

However, BENSON discloses a thermoelectric device, wherein is taught the thermoelectric material of the device can be of n-type only or p-type only (Col. 5, lines 54-57).

At the time of the present invention, it would have been obvious to of one ordinary skill in the art to modify the device as taught by KISHI, as modified by CHIU, by utilizing a thermoelectric conversion material that is only p-type or only n-type, as taught by BENSON, because the use of only one type of thermoelectric conversion material is advantageous since at various times the costs of the materials is different so that the most economical material may be selected and the manufacturing process does not have to be interrupted (BENSON, Col. 5, lines 57-62).

### ***Response to Arguments***

8. Applicant's arguments, see Remarks, p. 5, filed September 29, 2009, with respect to the rejection(s) of claim(s) 1-4 under 35 USC 102 (b) & 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the newly found prior art, KISHI et al., CHIU et al., and BENSON et al.

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. CHRISTOPHER BALL whose telephone number is (571)270-5119. The examiner can normally be reached on Monday through Thursday, 9 am to 5 pm Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nam X Nguyen/  
Supervisory Patent Examiner, Art Unit 1753

JCB  
01/06/2009